LANDSCAPE MANAGEMENT

5136

CIP Code: 01.0605

Landscape Management is a year long course that provides the student with an overview of the many career opportunities in the diverse field of landscape management. Students are introduced to the procedures used in the planning and design of a landscape using current technology practices, the principles and procedures involved with landscape construction, the determination of maintenance schedules, communications and management skills necessary in landscaping operations, and the care and use of equipment utilized by landscapers. Upon completion of the program, students have the opportunity to seek an industry approved State Certificate of Mastery in Landscape Management.

- Recommended Grade Levels: 10-12
- Recommended Prerequisite: None
- A two credit/two semester course. This course can be offered for a second full year at an advanced level and may also be offered in a two- or three-hour block for four semesters with a maximum of twelve credit hours.
- A Core 40 directed elective as part of a technical career area.
- This course qualifies as an Academic Honors Diploma elective.
- Competencies and learning activities defined.
- This course is included as a component of the Agriculture and Natural Resources career cluster and may also be included as a component of the Art, Media, and Communications and Business, Management and Finance career clusters.

Landscape Management

A-1. Students shall identify the fundamentals of insect development, the various insect pests responsible for causing damage in the landscape and determine the proper treatments.

1. Given pictures, identify various common pests found in the landscape.
2. Identify the characteristic evidence of insect pest feeding on trees and shrubs by actual signs and symptoms.
3. Determine the method of feeding for various insect pests.
4. Determine the proper control for each of the insect pests.
5. Identify the insects which are considered to be beneficial to man and explain how they are beneficial.
6. Identify and locate the basic parts of an insect.
7. Identify and differentiate between the various mouth parts found on insects.
8. Explain the growth and metamorphosis of insects.
9. Identify the various methods of control for insect pests and explain the principles of each method.

A-2. Students shall recognize the principles of disease, identify the various diseases responsible for causing damage in the landscape and determine the proper treatment.

1. Identify the biological causes of diseases and the definition of plant disease.
2. Identify the pathogens that cause plant diseases and explain their development.
3. Explain the "disease triangle" and the components of a disease.
4. Identify the various methods which can be used to control plant diseases in an integrated pest management system.
5. Evaluate the principles of diagnosing plant disease.
6. Identify the common diseases found in the landscape and the symptoms and signs which indicate their presence.
7. Evaluate the accepted recommended controls for the various landscape plant diseases.
8. Recognize the landscape problems which are classified as "people pressure diseases", determine their causes, and identify prevention methods.

A-3. Students shall identify the basic fundamentals of weed science, the various weeds found in the lawn and landscape and determine the proper methods of treatment.

1. Identify how weeds become pests and the problems that they cause in the landscape.
2. Identify the developmental stages and the life cycles.
3. Explain the procedure of classification and identify the various types of pest plants that are weeds.
4. Develop a weed control strategy and explain the procedures involved in the effective control of pest plants.
5. Compare and contrast the various methods of and the procedures involved in maintaining biological, cultural and/or chemical control.
6. Identify the various types of herbicides available and explain their methods of control.
7. Explain herbicide selectivity and identify the points of selectivity on a plant.
8. Given pictures, identify the common weeds which are problems in the landscape.
9. Determine the life cycle of common weeds and identify the recommended method of chemical control.
10. Explain the procedures involved in eliminating and maintaining a weed-free landscape.

A-4. Students shall analyze the client's site, using the proper diagnostic techniques, determine the problem, isolate the causes, and prescribe the proper treatment for the problem area.

1. Identify the techniques and procedures involved in conducting a proper diagnosis of a landscape site.
2. Evaluate the major steps to take in order to properly make a diagnosis.
3. Recognize the groups of agents that cause plant problems.
4. Recognize the importance of reference sources for determining plant problems.
5. Analyze a landscape site for potential pest problems and determine the possible causes utilizing the diagnosis procedures and the "Diagnostic Chart for Plant Problems".
6. Prepare a plant sample for submission to a diagnostic lab.

A-5. Students shall identify and explain the safety procedures used in the handling and application of horticultural chemicals.

1. Identify the different methods by which pesticides can enter the human body.
2. Identify the methods of accidental poisoning which can occur due to exposure to pesticides.

3. Identify the major ways in which humans can be exposed to pesticides.
4. Identify the proper protective clothing which a pesticide applicator should wear during application procedures.
5. Identify and explain the uses for the various protective equipment which pesticide applicators wear as safety devices.
6. Explain the "Protective Clothing and Equipment Guide" and identify precautionary actions to be taken prior to pesticide application.
7. Identify and explain the procedures for handling, storage, transportation, mixing and loading, and personal clean-up of pesticides.
8. Recognize the safety guidelines for the various application equipment.
9. Identify the basic safety guidelines for the application and cleaning of pesticide equipment.
10. Recognize the proper procedures for the disposal of pesticides.
11. Identify the basic first-aid procedures for pesticide poisoning and recognize the signs of accidental pesticide poisoning.
12. Identify the parts of a pesticide label and interpret the information found there.

A-6. Students shall analyze environmental quality as it relates to proper lawn and landscape maintenance.

1. Identify the impact that pesticides have on our environment and the effects on our natural resources.
2. Recognize the potential hazards and benefits that pesticides present in their use.
3. Recognize the effect of pesticides on our groundwater and the types of pesticides that contribute to its contamination.
4. Outline various ways to avoid groundwater contamination and help the environment when using pesticides.
5. Explain the procedures for reporting to environmental agencies.

B-1. Students shall investigate the different styles of landscape design.

1. Identify the types of design schemes used in landscape design (radial, arc tangent, rectilinear 90o, rectilinear 45o and curvilinear).
2. Compare and contrast the differences in each of the design themes.
3. Identify, from examples, the different styles and themes used in landscape design.
4. Identify and explain the concepts of symmetrical and asymmetrical balance.

B-2. Students shall investigate the importance of the landscape principles and the steps involved in the design process.

1. List the characteristics of a good landscape design.
2. Identify and explain the principles of landscape design.

3. List and discuss the steps involved in the design process.

4. Identify from graphic examples and define the following:

    a. Order
    b. Unity
    c. Dominance
    d. Repetition
    e. Scale
    f. Balance

5. Determine how each of the landscape principles are relative to and how each strongly influences the other principles in the landscape design.

B-3. Students shall survey and analyze the client's needs, in the landscape design process, utilizing the proper design question and discussion topics.

1. Identify and outline the client's needs prior to the development of a site design.

2. Determine what information needs to be obtained from the client during an initial site contact.

3. Apply the "Client Needs Checklist" to a residential design situation.

4. Determine how the client's needs will influence the landscape design.

B-4. Students shall generate a scale drawing of the client's property, which includes all existing fixed features and elements, using standard symbols and terms.

1. Utilize the engineer's scale in measuring and calculating dimensions on a drawing or design.

2. Demonstrate how the scale is used to calculate distances and measurements from the drawing to the site.

3. Organize all the collected data and produce a sketch of the landscape site which applies the proper scale to the drawing.

4. Recognize and construct the symbols used in landscape drawings for utilities, easements, and plant materials.

5. Identify and locate all existing plant material and fixed elements on the site, using the correct symbols.

6. Demonstrate the procedures involved in measuring a residential site and how to locate all of the existing features on the site.

B-5. Students shall develop a complete site analysis using standard symbols and features.

1. Explain the importance of a site analysis and the function that it serves in the development of the landscape.
2. List the important environmental and site features to consider when conducting a site analysis.
3. Examine a residential landscape and perform a site analysis. Be sure to perform the following functions:
    a. Prepare a site inventory/survey.
    b. Evaluate on-site and off-site conditions relative to the landscape site.
    c. Determine the climatic influences on the site.
    d. Determine the location of all utilities and easements.
    e. Evaluate and record all existing vegetation.
    f. Locate house orientation in relation to North.
    g. Consider views both on and off the site and the location of the site.
4. Record the conditions of the landscape site and prepare an analysis based on the list of considerations for a site analysis.
5. Recognize and reproduce the standard symbols used in the development of a site analysis.
6. Develop a graphic representation of the site analysis of a residential site.

B-6. Students shall provide a functional diagram of the client's site, locating the various activity areas on the site including the location, identification and explanation of the public, living and service areas.

1. Locate the public, living, and service areas on a residential site.
2. Identify the design fundamentals of landscaping the public area.
3. Outline the four landscape units considered in the public area and explain their principles involved in design.
4. Identify the design fundamentals for landscaping the living area.
5. Determine the important considerations in the development of the living area.
6. Identify the different units of the living area and how they affect the design.
7. Explain the importance of on-site and off-site view into the public and living areas.
8. Explain the relationship of the living area and the functional landscape.
9. Explain the purpose of the service area.

10. Explain how planning considerations will differ for the public, living, and service areas and determine the specific design considerations of each.
11. Apply all of the design information for the activity areas to a specific design problem.

B-7. Students shall draft, to scale, a landscape plan of the client's site including the proper planting symbols and labels on all of the proposed and existing features.

1. Apply all design techniques and site information to a master plan drawing of a residential site.
2. Identify and explain the uses of the basic equipment that a landscape designer uses in the drafting process.
3. Describe what a line drawing consists of and explain line weights, contrast, and quality.
4. Demonstrate the basic skills in the completion of a line drawing.
5. Define the various surfaces used for the production of line drawings.
6. Explain what a scale is and how it is used by the landscape designer.
7. Demonstrate the proper uses of a lettering guide.
8. List and explain the steps involved in the drawing sequence.
9. Explain the blueprint process.
10. Describe a plan drawing, the purpose of its use, and what is typically found on it.
11. Outline the steps involved in the construction of a landscape plan drawing and explain the process of each step.

B-8. Students shall develop a planting schedule for the implementation of the landscape design and identify plant materials listing quantity, interest, function and size.

1. Determine the effects of budget and maintenance on landscape installation.
2. Explain "phasing" and how it relates to the landscape design.
3. Determine the installation sequence of landscape materials and plants from the design.
4. Outline the order of implementation of the proposed elements on a landscape design.
5. Compose a plant list that describes the quantity, size, function, and landscape interest of the proposed plant materials.
6. Prepare a planting schedule from the plant list.
7. Explain the relationship between budget and design implementation.

C-1. Students shall identify woody trees, shrubs and ground covers of importance in Indiana.

1. Develop the ability to identify approximately 50 landscape plants of importance in Indiana by slides and physical characteristics, such as leaves and twigs.
2. Develop the ability to spell and pronounce, correctly, both common and botanical names of the plants.
3. Develop the knowledge of the outstanding landscape characteristics of trees, shrubs, and ground covers.
4. Develop a basic knowledge of the environmental requirements of these plants.
5. Develop a knowledge of the mature size of the plants.

C-2. Students shall identify herbaceous annual, perennial, and biennial plants by characteristics: size, interest and growth requirements.

1. Develop the ability to identify herbaceous annual, perennial, and biennial plants of importance in Indiana by slides, pictures, and live samples.
2. Develop the ability to spell and pronounce, correctly, both common and botanical names of the plants.
3. Develop the knowledge of the outstanding landscape characteristics of these selected plants, including the blooming period.
4. Develop a basic knowledge of the environmental requirements of these plants.
5. Develop a knowledge of the mature size of the plants.
6. Determine the life cycle of each plant as annual, perennial, or biennial.
7. Identify and demonstrate the handling and planting procedures for annual, perennial, and biennial plants, recognizing the differences in procedures of each.

C-3. Students shall select plants and materials for the landscape which satisfy the functional and aesthetic requirements of the site and the client.

1. Recognize the basic considerations in selecting landscape plants for the site.
2. Identify the environmental aspects of the site when choosing plants for it.
3. Identify the environmental influences on-site that affect plant selection:
    a. Air circulation
    b. Soil type
    c. Temperature
    d. Sunlight
4. Identify the term “microclimate” and explain its considerations on the site.
5. Recognize man’s influence on the site and how man affects the conditions of the site.

6. Identify the criteria for selecting plants according to growth, visible characteristics, mature size, and life span.
7. Explain "overplanting" and outline ways to avoid such landscape plantings.
8. Recognize the functional and aesthetic uses of plants and landscape plantings.
9. Identify and explain how plants can form "outdoor rooms" in the landscape.
10. Recognize where to find sources of information concerning plants, their characteristics, and where to locate quality plant materials.

C-4. Identify and demonstrate the procedures used in soil preparation for landscape plants.

1. Recognize the three major classifications of soils.
2. Identify the major materials that make up the composition of our soils.
3. Recognize the importance of humus and the function that it serves in the soil.
4. Explain the function of air and water in the soil and the proper ratio of organic matter, minerals, water, and air.
5. Explain the procedures involved in "conditioning" the soil.
6. Identify the importance of a soil test and the basic procedures involved in taking a soil sample.
7. Identify the functions of fertilizer and the various types available for landscape plants.
8. Explain "pH" and its affect on soils and landscape plants.
9. Recognize the importance of proper drainage in soils and the affects upon landscape plants.
10. Identify the measures necessary to correct poorly drained soils.
11. Identify the function of the soil probe and demonstrate its use.

C-5. Students shall identify and demonstrate the procedures used in the installation of landscape plant material.

1. Identify and differentiate between the types of landscape plant stock: container, balled and burlapped, and bare-root material.
2. Indicate the best times to plant landscape plant materials and the importance of timing the planting procedures.
3. Recognize and explain the pre-plant operations involved in the installation process of plants.
4. Explain the plant care necessary for the types of materials prior to planting.
5. Describe the soil preparation process for landscape plants.
6. Explain the planting procedures for bare-root plants, balled and burlapped plants, and containerized plants.

7. Identify the guide lines for planting in specific soils.
8. Explain the procedures for planting in poorly drained soils.
9. Identify the post-planting procedures for landscape materials.
10. Explain the aspects of pruning newly planted landscape materials.
11. Explain the staking and guying process for newly planted trees.
12. Explain the importance of wrapping newly planted trees.
13. Identify the important aspects of watering newly installed landscape plants.
14. Explain "transplanting" and the process involved.
15. Explain the two-year process for transplanting.
16. Outline and demonstrate the techniques involved in the planting of a tree and/or shrub, including the pre-plant and post-planting care procedures.

C-6. Students shall identify the various structures used in the landscape and explain the principles involved in their use.

1. List the common structures used in the landscape and explain their purpose.
2. Identify the uses and types of grass pavers.
3. Identify the uses of railroad ties in the landscape and explain the treatment of ties.
4. Explain the basic techniques for the installation of railroad ties.
5. Discuss the function and location of patios in the landscape including the effects of size, shape, and materials.
6. Identify the functions of walkways in the residential site and explain the principles of location, shape, and material involved in their uses.
7. List the different functions of using a fence in the landscape and the treatment of such a structure.
8. Explain the use of landscape edging and the proper installation techniques involved.

D-1. Students shall examine and differentiate between the methods for the care of horticultural plants, materials and structures utilized in the landscape.

1. Explain and demonstrate the proper procedures for watering landscape plants.
2. Discuss and follow the proper procedures for staking, guying, and wrapping trees.
3. Explain the functions and characteristics of landscape mulches and employ the application procedures in the landscape.
4. Describe the functions and characteristics of fertilizing woody trees and shrubs and demonstrate the proper application of fertilizers in the landscape.
5. Outline the functions and demonstrate the proper procedures for pruning woody ornamental plants.

D-2. Students shall interpret how environmental influences affect plants and maintenance considerations, including hardiness zone, growth requirements and mature size.

1. Compare the various climatic factors that influence the landscape and the plant materials.
2. Explain the concept of "hardiness" and recognize the USDA Hardiness Zone map and evaluate its significance.
3. Compare and contrast the atmospheric factors that affect the landscape.
4. Analyze the root zone environment and its affect on plants.
5. Explain the concepts of mature plant size and spacing of plant materials.
6. Identify the maintenance considerations of landscape structures.
7. Recognize the basic techniques of design to achieve minimum maintenance.

D-3. Student shall complete the steps necessary to develop a landscape maintenance plan.

1. Practice the procedures and evaluate the criteria necessary to develop a landscape maintenance schedule for a residential site.
2. Utilize the tools needed to properly maintain a landscape site.
3. Explain the role that plants and materials take in developing the landscape maintenance plan and outline the procedure of organizing the materials.
4. Determine the levels of maintenance for residential sites and assess how the proper level of maintenance is determined for the site.

D-4. Students shall plan a year-round maintenance schedule for a landscape site.

1. Organize data and information collected from a residential landscape site to develop a year-round maintenance schedule.
2. Calculate the approximate time required to perform the maintenance tasks.
3. Organize landscape plants found on the landscape site into their respective categories and groups.

D-5. Students shall follow safety and maintenance procedures necessary for the operation of basic power equipment used in landscape maintenance operations.

1. Demonstrate the correct use of basic power equipment used in small maintenance operations.
2. Differentiate between the types of small engines used and analyze the principles of operation and use of the power equipment.

3. Discuss the proper maintenance and servicing procedures involved in the basic power equipment.

4. Utilize proper safety practices when using small power equipment in landscape operations.

E-1. Students shall examine career opportunities in and the importance of the landscape industry to ornamental horticulture.

1. Compare the various occupational options available in the field of landscape management and contrast their basic functions.

2. Examine the need for professionals in the landscape industry and their influence on the environment.

3. Investigate the job requirements, educational requirements and the public attitudes toward people in the landscape industry.

4. Demonstrate the use of the tools used by professionals in the landscape design industry.

E-2. Students shall put in action the equipment and materials needed to start a business in the landscape maintenance business.

1. Explain the definition of "landscape maintenance" and examine the various jobs required of the individual involved in maintaining the landscape.

2. Prioritize the personal requirements for beginning in the landscape maintenance business and evaluate the employment possibilities available.

3. Identify and explain the uses of the various "tools of the trade" used in maintaining the landscape.

4. Distinguish the relationship between landscape design and landscape maintenance.

E-3. Students shall apply personal communication skills and recommend appropriate employee/customer relations.

1. Support the need for effective communication skills in the horticulture industry.

2. Demonstrate the standards for handling customers in the retail business.

3. Demonstrate the standards for handling customer complaints.

4. Employ the methods and procedures for maintaining customer satisfaction.

E-4. Students shall make use of correct telephone procedures used in the horticulture industry.

1. Outline the basic points for dealing with people on the telephone.
2. Evaluate the influence of their speech habits on telephone voice tones.
3. Compare and contrast the professional phrasing used on the telephone to insure effectiveness and efficiency.
4. Examine the importance of good telephone etiquette and its importance in good business.

E-5. Students shall demonstrate the procedures of selling landscape planning to a potential client.

1. Put in action the proper procedures for presenting a landscape design to a potential client.
2. Outline the strategies for making a successful sale.
3. Summarize the methods for presenting a landscape design to a potential customer.

E-6. Students shall calculate materials, labor, and equipment needed for a landscape project in order to prepare a written estimate for a customer.

1. Make use of the features of a cost estimate for proposed landscape designs and landscape maintenance.
2. Utilize the correct procedures for calculating the necessary items in a cost estimate.
3. Prepare a cost estimate for a proposed landscape design and for a complete landscape maintenance project.

E-7. Students shall compose a project estimate to include labor, equipment and material needs for a completed landscape design.

1. Outline the procedures and sequences leading to the preparation of a landscape estimate and bid.
2. Justify the items that are included in a bid and the order in which they are listed.
3. Organize estimate materials into a written landscape bid.
4. Prepare a complete bid, proposal and contract for a landscape client from a landscape design and site information.